



Strengthening democracy: The capacity of AI-powered insights for enhancing policy deliberation and transparency

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Abstract: The global decline in democratic governance suggests that more innovative approaches are required if civic engagement in the process of policy development is to be enhanced or maintained. This research explores the role of generative artificial intelligence and natural language processing in this context through a case study of three Canadian parliamentary Bills: Bill C-12 (Canada Net-Zero Emissions Accountability Act), Bill S-211 (Fighting Against Forced Child Labour in Supply Chains Act), and Bill C-18 (Online News Act). Using Python-based tools and OpenAI's 4o-mini, this study analyses transcripts of parliamentary debates to extract key argumentative themes and to generate policy recommendations. AI-generated recommendations are then compared with the actual content of the Bills, identifying areas of alignment, complementarity, and divergence. The findings demonstrate AI's potential to provide an analytical lens on legislative processes, surfacing underemphasised arguments and revealing alternative policy dimensions; aspects often absent in final legislation. Ultimately, this study underscores AI's capacity to augment, rather than replace, traditional governance methods, offering a pathway to strengthen the quality and transparency of democratic deliberation.

Keywords: Artificial intelligence, Democratic deliberation, Governance, Legislative studies, Natural language processing, Policymaking

1. Introduction

Democracy, heralded as the cornerstone of modern governance, faces unprecedented challenges. A global decline in democratic governance (Garcia, 2024; Diamond, 2015; Habibi & Kusuma, 2022) has exposed significant gaps in civic engagement, policymaking, and public trust (Rosenbaum, 2022; Stavros Moutsios, 2008; Schmidhuber et al., 2020). These challenges are often rooted in the overwhelming complexity of policy problems and the difficulty of translating a wide spectrum of public arguments into coherent legislation.

In response, scholars and practitioners are exploring innovative approaches to reinforce democratic processes. A promising avenue lies in the integration of artificial intelligence (AI), centred on its ability to process and analyse large volumes of text to extract key arguments and themes. This research focuses on the democratic practice of deliberation, the offering and receiving of cognitively compelling reasons about matters of common concern (Warren, 2017). In the context of representative systems, legislative debates are a critical form of elite deliberation where elected officials justify their position. However, the sheer volume and complexity of these debates can obscure key points of contention and consensus, making it difficult to ensure all perspectives are adequately considered.

This study investigates whether generative AI can enhance the quality and transparency of the deliberative process. By leveraging AI to analyse the substance of parliamentary debates, we create a structured overview of the argumentative landscape, not by replacing human legislators but rather by augmenting humans' capacity to see aspects of the deliberative field more clearly. The suggestion is that AI may represent a tool to systematically identify which arguments are prominent, which ones are marginal, and what alternative policy solutions are embedded within the discourse.

We do this via case studies within the Canadian Parliament, zeroing in on third reading debates of three Bills: Bill C-12 (Canada Net-Zero Emissions Accountability Act), Bill S-211 (Fighting Against Forced Child Labour in Supply Chains Act), and Bill C-18 (Online News Act). Using transcripts from the third readings of these Bills, we employ an AI-powered platform to process deliberations to extract key themes and generate policy recommendations. AI-generated recommendations are then compared with the actual policies contained in the Bills, highlighting areas of overlap, divergence, and complementarity. The purpose is to understand the practical implications of using AI in deliberative forums for policy formulation. This comparative approach allows us to address the following research questions:

- In what ways do AI-generated policy recommendations derived from these debates align with, diverge from, or complement the final legislative text?
- How can generative AI illuminate the landscape of arguments presented in elite legislative debates, and how useful are the identified themes for understanding the deliberative process?
- What are the practical strengths and weaknesses of using AI as an analytical tool to support and evaluate legislative deliberation

The remainder of this article is organised as follows. Next, we provide an overview of the benefits generated by deliberative democracy and the potential role of AI within it. Section three details our methodology, including justification for our choice of AI model and a description of our analytical

process. Section four presents our findings, with an interpretive analysis of the comparison between AI recommendations and the Bills under study. Section five discusses the broader implications of these findings, including practical recommendations and a critical assessment of AI's utility. A short conclusion follows.

2. Democratic deliberation: Its benefits, its drawbacks, and the (potential) role of generative AI in its resurgence

The health of a democracy is often measured by its ability to foster high-quality deliberation around contested issues. According to Warren (2017), deliberations are "practices that generate influence through the offering and receiving of cognitively compelling reasons." While ideal deliberation involves all citizens, in large representative systems, the key forum is the national legislature. Through parliamentary debates, representatives articulate reasons for or against proposed laws, shaping public understanding and legitimizing political decisions.

The theoretical ideal for such deliberation is often found in direct democracy, where all members of an affected society participate in decision-making. The benefits of this approach are well-documented: it can improve governmental efficiency (Asatryan & De Witte, 2015), offer citizens educational opportunities, and increase their satisfaction with democratic systems (Stutzer et al., 2019). Research also indicates that democratic deliberations can reduce anxiety about the future by fostering positive emotions like hopefulness and compassion while mitigating negative ones such as fear and confusion (Leino & Kulha, 2023). Democracy's inherent benefits – individual autonomy, fair procedures, active citizen involvement, and transparency – often take precedence over voters' material self-interests (Harms & Landwehr, 2020), a perspective that differs from that commonly found in economics, where the emphasis tilts to more practical motives and material gains. Matsusaka (2008) demonstrates this by illustrating how U.S. states with direct democratic practices more swiftly adapt and redirect policies compared to those without such practices. However, due to the technical and practical limitations of implementing direct democracy in large, complex nations, modern democracies adopt a representative model (Reilly, 2018). Here, the deliberative function is primarily carried out by elected officials acting on behalf of the public. Thus, the deliberative benefits are pursued through the institutional forum of the legislature rather than through direct citizen assemblies.

Although a majority of the world's political regimes are classified as liberal or electoral democracies, their prevalence is declining. In fact, a minority of the global population currently resides within these democratic systems. Thus, while more than half of the regimes are democratic in nature, larger populations are often governed in authoritarian or non-democratic contexts (V-Dem Institute, 2023). Moreover, recent studies highlight a concerning trend: democracy has been experiencing a global decline (Freedom House, 2024; Smolka, 2021; Croissant & Haynes, 2020). Indeed, countries not engaged in democratic processes often rely on authoritarian, autocratic, or hybrid regimes, where power is concentrated in the hands of a single leader, ruling party, or small elite group. These systems may suppress political pluralism, limit civil liberties, and prioritize state control over citizen participation, often using mechanisms such as state propaganda, censorship, or coercion (Repucci & Slipowitz, 2022).

2.1. The potential of AI in supporting deliberation

Artificial intelligence (AI) possesses the potential to enhance democratic deliberation. It also carries the risk of impeding such advancements. For example, Jungherr (2023) highlights the capacity of AI to rebalance the relationship between democracy and autocracy, emphasizing that autocracies may gain a competitive edge due to permissive and often outdated privacy, as well as their vast data access and centralized resource allocation (Filgueiras, 2022; Lee, 2018). Unlike the situation in robust democracies where constraints on data collection and deployment exist, autocracies may exploit the more limited constraints in place and then use the tools of AI to adjust systems of governance, alter public services, and tighten social control, a situation exemplified by China's Social Credit System (Creemers, 2018; Ding et al., 2020; Zeng, 2022). Certainly, many democracies excel in aggregating and processing information through free expression and the press. It is also possible that they employ AI-oriented tools to do so. However, AI can also be deployed by autocratic entities to overcome informational asymmetries and enhance state capacity. The outcome of doing so may be improved cultural, economic, or health opportunities, which in turn may result in heightened support for the autocratic organization that implemented the changes (Diamandis & Kotler, 2020; Lee & Quifan, 2021). Such developments could challenge democratic systems, contributing to a further shift in global power dynamics favouring autocracies (Matovski, 2021; Buchanan & Imbrie, 2022).

The complexity of modern policy, combined with political polarization, can engender debates that are fragmented and difficult to follow (O'Donohue & Carothers, 2019). The volume of discourse can make it challenging for legislators, staff, journalists, and the public to track the evolution of arguments and identify key points of consensus or disagreement (Janda et al., 2023). For information management problems, artificial intelligence (AI), particularly natural language processing (NLP), shows promise as a means by which to improve democratic decision-making (Duberry, 2022). Investigation of AI's potential has considered a range of attributes. These include facilitating civic engagement, enhancing transparency, improving accountability (Savaget et al., 2018), and promoting more inclusive and representative democracies (Helbing et al., 2023). It is also suggested that AI can enhance communication, deliberation, and understanding within large communities (Coeckelbergh & Sætra, 2023) via facilitation, fact-checking, argument mining, and opinion visualization (Lawrence and Reed, 2019; Landemore, n.d.). In democratic institutions, such processes amplify transparency and accountability, which in turn may foster trust and reliability (Hollyer et al., 2011; Androniceanu, 2021; Brown et al., 2014).

People are motivated to voice their opinions and participate in public deliberations due to a combination of intrinsic and extrinsic factors (Aitamurto et al., 2016). Moreover, incorporating the opinions of large numbers of individuals in policy formulation can lead to epistemic, democratic, and economic benefits (Aitamurto & Chen, 2017). Because AI and NLP can support analysis of vast amounts of unstructured text from debates, patterns can be identified, arguments summarized, and opinion landscapes visualized, outcomes that can facilitate broader civic participation (Zhang et al., 2023). Accordingly, the integration of AI, particularly natural language processing (NLP), into democratic deliberation may enhance inclusivity, accuracy, and efficiency in policymaking.

NLP tools also have the potential to moderate discussions as recent advancements in NLP emphasize modelling, learning, and reasoning (Zhou et al., 2020). These advancements can enhance conflict analysis at the macro level, which employs agent-based modelling – where individual agents simulate decision-making to understand interactions – and spatial computation, which analyses geographic data to examine how location affects conflict dynamics. Together, these methods allow for empirical validation (Cederman & Girardin, 2023). Similarly, the use of sophisticated data analysis techniques, such as those in philology workflows, supports the collection of higher-quality data to address complex problems (Cafiero, 2023). Approaches of this nature demonstrate the potential of AI technologies in navigating the complexities of diverse stakeholder interactions.

In the context of democratic discussions, machine learning (ML) and pattern recognition are useful tools for addressing governance challenges and improving public participation. Research has demonstrated that ML can analyse complex governance systems involving many stakeholders, allowing users to understand how different groups interact and make decisions (Wernli, 2023). One technique, Support Vector Machines (SVM), helps identify links between various factors – such as economic conditions or social movements – and their effects on democratic results, helping users identify which influences matter most (Gründler & Krieger, 2021).

Automated systems that recognise patterns can track trends in conflict escalation. By analysing historical data, these systems enhance our ability to predict when and why conflicts might arise, deepening our understanding of their underlying causes (Chadefaux, 2023). As well, tools that use content analysis (examining written or spoken material for key themes), network analysis (looking at relationships between different groups), and time-series data (analysing changes over time) showcase how computational methods can create more inclusive and effective ways for citizens to engage in governance decisions. By harnessing these technologies, societies may foster richer democratic participation and make choices that reflect broader societal needs (Shin & Rask, 2021).

2.2. Risks and ethical considerations of AI in democratic contexts

The application of AI in governance is not without peril. While it is tempting to focus on the risks of AI for surveillance and social control in authoritarian regimes, it is also essential to recognise the threats that AI poses within democratic societies. A balanced view requires acknowledging these challenges. They include the following:

- **Algorithmic Bias:** AI models trained on historical data can perpetuate and even amplify existing societal biases related to race, gender, and ideology, potentially leading to unfair or discriminatory policy recommendations (Akter et al., 2021).
- **Misinformation and Manipulation:** The same generative technologies used for analysis can be used to create sophisticated misinformation (Zhou et al., 2023), undermining the informed public discourse that deliberation relies on.
- **Technocratic Over-reliance:** There is a risk that policymakers might defer to AI-generated recommendations without sufficient critical scrutiny, creating a new form of "black box" governance that, as Corlăţean (2024) warns, lacks democratic accountability and fails to align with public will formation.

- **Challenges in Adoption:** Governments often face significant hurdles in adopting NLP tools to generate civic participation. Studies show a disconnect between the views of policymakers and public servants on the utility and implementation of these technologies (Guridi et al., 2024), revealing a gap between technological potential and practical reality.

Therefore, while this study explores the potential benefits of AI in democratic deliberation, it does so with a critical awareness of these limitations.

3. Methods

3.1. Research overview

To simulate forums where diverse stakeholder perspectives are generated and gathered, this study examines the official transcripts (Hansard, Canada's record of parliamentary debate) of third-reading debates from Canada's Parliament for three Bills. AI-driven policy recommendations are generated and compared with the policies articulated in actual legislation. By identifying complementary and divergent policy dimensions, insight is derived into the effectiveness of AI in enhancing democratic deliberation.

Canada's parliament provides a beneficial context for evaluating advanced technologies in governance. Canada values inclusive and participatory governance (Freedom House, 2024; Legislative Services Branch, 2019). Also, by drawing from third reading debates – a forum where multiple independent and political party perspectives are represented – this study can capture and then examine (via AI tools) diverse perspectives and opinions. The relevance and availability of multi-party input and debate were heightened during the period these Bills were debated, a consequence of the fact that Canada's parliament at the time was operating in a minority government situation.

3.2. AI-powered data processing

After collecting the data (the Hansard transcripts from Third Reading debates), it was processed using a Python program powered by OpenAI's GPT-4o-mini.

3.2.1. Justification for LLM choice

GPT-4o-mini was selected for this study for several reasons. Practically, it offers a strong balance of cost-efficiency, speed, and stability for processing large documents (OpenAI Platform, 2024). As a recent and powerful "frontier" model, it also possesses sophisticated capabilities in natural language understanding, summarization, and text generation, features that are essential for policy analysis (Costa-jussà et al., 2024). While other powerful large language modules (LLMs) exist (e.g., Google's Gemini, Anthropic's Claude), GPT-4o-mini is a representative example of current state-of-the-art technology. Its performance in similar analytical tasks has been well-documented (Sonoda et al., 2024; Liu et al., 2024).

A validation process was integrated into the methodology to ensure the accuracy of the AI's analysis and to mitigate risks such as model hallucination or the omission of salient arguments. For clarity, the model utilized, GPT-4o-mini, is an official OpenAI variant accessed via its publicly available API with a private key; it is not a custom or private configuration. The core of this process involved a manual, qualitative verification of the AI's output for all three case studies, where the authors cross-referenced the generated thematic summaries and policy recommendations against the original Hansard transcripts. The objective was to confirm that the identified themes accurately reflected the central arguments and that each policy suggestion was directly traceable to statements made by parliamentarians. A transparent illustration of this grounding is provided in the appendices, where Tables 2, 4, and 6 juxtapose each AI-generated policy with a relevant quote from the debate. This pairing serves as direct evidence of the validation, strengthening the internal validity of the findings by showing how the model's outputs are substantively based on the source data.

3.2.2. Data analysis process

The analytical process was fully automated by the custom Python program through prompt engineering. For each of the three Bills, the complete, unedited Hansard transcript was provided as a single input to the program. The program, leveraging the capabilities of the GPT-4o-mini model, was designed to execute a comprehensive analysis on the raw text without any manual pre-processing or segmentation.

The prompt instructed the AI to perform the following sequential tasks on the entire transcript:

- 1) **Internal Structuring and Summarization:** Process the full debate to understand its structure, identify speaker arguments, and summarize speakers' positions and concerns.
- 2) **Thematic Synthesis:** Analyse the discourse to identify the most significant recurring themes and points of contention across all speakers.
- 3) **Holistic Policy Generation:** Based on its comprehensive analysis of the entire debate, the model was then asked to create specific policy recommendations that represented the main themes and ideological viewpoints discussed.

This approach was chosen to test the AI's ability to manage and interpret large, unstructured deliberative texts, simulating a real-world case where a user could derive policy insights directly from a primary source document.

3.2.3. Prompt engineering

To perform the holistic policy generation, the AI-powered Python program was given a directive (see Figure 1 below) to act as a smart policy analyst and a helpful assistant. It was asked to provide three conservative policies and three liberal policies. (Note: In Canada, two of the most significant political parties are the Liberal Party and the Conservative Party. Our directive was focused on philosophical perspectives, rather than specific political affiliations.) This prompt was chosen to elicit concrete, distinct policy ideas that reflect different ideological anchor points often present in legislative debates. Before settling on this final prompt, we conducted iterative testing with several variations to ensure the output was a faithful summary of the debate's content and a useful

generation of structured policy alternatives. This structured approach helped us move beyond a simple summary to a more analytical output.

Figure 1: Code snippet of the directive given to the AI-powered program

```
def summarize_text(text):
    response = openai.ChatCompletion.create(
        model="gpt-4o-mini",
        messages=[
            {"role": "system", "content": "You are the smartest policy analyst in the world and a helpful assistant."},
            {"role": "user", "content": f"Please study the following debate and tell me the key theme of the text
            and suggest 3 conservative policies and 3 liberal policies based on the contents of the debate:\n\n{text}"}
        ],
        max_tokens=1000
    )
```

The chosen prompt, as detailed in Figure 1 above, is not a simple query but a deliberately constructed multi-part directive, engineered to guide the AI through the three-stage analytical process. Its structure ensures that the final output is analytically robust and directly tied to the source material. Here is a justification of how each component of the prompt operationalized a specific stage of the automated data analysis process:

- 1) Connection to "Internal Structuring and Summarization":
 Prompt Component: {"role": "system", "content": "You are the smartest policy analyst in the world and a helpful assistant."} and "Please study the following debate...".
 Justification: The initial commands function as the trigger for the first stage. For a large language model, the instruction to "study" a text is not a passive act. It requires the model to process the entire unstructured transcript, identifying speaker arguments, parsing key points, and creating an internal, structured representation of the debate's content. Furthermore, assigning the role of the "smartest policy analyst" primes the model to perform this initial structuring not as a casual reader, but with an analytical lens specifically focused on policy-relevant information, which aligns with the goal of summarizing key positions and concerns.
- 2) Connection to "Thematic Synthesis":
 Prompt Component: "...and tell me the key theme of the text...".
 Justification: This part of the prompt directly executes the second stage of the analysis. It forces the model to move beyond the summary of individual arguments (from Step 1) to synthesizing the entire discourse into a singular, overarching concept. This command compels the AI to identify the most significant and recurring point of contention or consensus that permeates the debate.
- 3) Connection to "Holistic Policy Generation":
 Prompt Component: "...and suggest 3 conservative policies and 3 liberal policies based on the contents of the debate...".

Justification: This final command is the most critical for the third stage and has two functions that ensure a "holistic" output:

- a) **Grounding the Output:** By specifying that the recommendations must be "based on the contents of the debate," it anchors the AI's generation directly to the source material. This prevents the model from offering generic policies from its training data and ensures the recommendations reflect the specific arguments made by the parliamentarians.
- b) **Revealing Ideological Tension:** The directive to generate "3 conservative policies and 3 liberal policies" provides the core analytical structure. This is crucial because it forces the model to recognise and articulate the ideological tensions or "points of contention" identified in the thematic synthesis stage. Rather than producing a single, neutral, or compromised policy suggestion, this structure elicits concrete and distinct policy alternatives that map onto the different philosophical perspectives present in the debate. It transforms the AI's output from a simple summary into an analytical map of potential, ideologically driven outcomes, thereby achieving a holistic generation of policy alternatives reflective of the deliberative landscape.

The prompt functions as a complete, automated workflow within a single instruction. The initial commands establish the foundational understanding, and the final command uses that foundation to produce a structured, analytical, and contextually grounded output.

3.3. Policy comparison and validation

In the final stage, the AI-generated recommendations were compared with the actual policies outlined in the final text of the Bills. Our intention was to:

- Highlight areas where AI-generated policies aligned with or diverged from legislative outcomes.
- Identify potentially overlooked themes or enhancements based on the debate's content.
- Critically evaluate the utility and relevance of the AI-driven analysis.

The complete code used for the program can be found in the following link:

<https://aiforallvoices.github.io/info/documents/thesis/Python%20Code%20for%20Jupyter%20Notebook.pdf>

4. Policy comparison and analysis

Here, we compare the AI-generated policy recommendations against the final legislative text for the three Bills (Table 1). A detailed comparison for each Bill can be found in Appendices A, B, and C. The analysis below focuses on our interpretation of the key divergences and alignments to understand the strengths and weaknesses of the AI's contribution.

Table 1: Summary of AI contribution strengths and weaknesses

Bill	AI Contribution Strengths	AI Contribution Weaknesses
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<p>Bill C-12 (Net-Zero Accountability)</p>	<p>- Surfaced Economic Concerns: The AI strongly emphasized the need for economic impact assessments, a key point of contention in the debate that was not explicitly mandated in the final Bill.</p> <p>- Highlighted Federalism Tensions: AI clearly articulated the need for greater provincial autonomy, reflecting a major theme of the debate.</p>	<p>- Generated General Themes: Identified broad themes like "Target Setting" and "Monitoring" without adding significant analytical depth beyond what is obvious from the Bill's title.</p> <p>- Missed Key Mechanisms: Failed to generate recommendations related to the crucial Net-Zero Advisory Body, a core component of the Bill.</p>
<p>Bill S-211 (Fight against Forced Labour)</p>	<p>- Proposed a More Holistic Framework: Generated policies for victim support and consumer education campaigns, dimensions completely absent from the Bill's text but ethically relevant to the problem.</p> <p>- Advocated for Stronger Enforcement: Suggested harsher penalties and direct liability for executives, reflecting the debate's calls for "more teeth" in the legislation.</p>	<p>- Understated a Core Function: It did not generate a recommendation related to the public registry of reports, which is a central transparency mechanism in the actual Bill.</p>
<p>Bill C-18 (Online News)</p>	<p>- Captured Ideological Contradictions: Its recommendations reflected the deep ideological divide in the debate, proposing both laissez-faire, market-driven solutions and stricter regulations on digital platforms, an inherent tension that the Bill attempts to resolve.</p> <p>- Identified Alternative Support Mechanisms: Proposed direct financial support for local journalism and media startups, an alternative path that was discussed in the debate but not chosen in the final Bill.</p>	<p>- Produced Contradictory Advice: By recommending both minimal regulation and stricter regulation, the AI's output could be seen as incoherent without the context of a deeply divided debate.</p> <p>- Oversimplified the Regulatory Body: Failed to mention the central role of the CRTC, the oversight body for the entire framework.</p>

4.1. Analysis of findings

Based on our interpretation, the comparison reveals a consistent pattern: the AI excelled at capturing the spirit and central tensions of the political debate, while the final Bills were focused on concrete, and often compromised, legal mechanisms.

For Bill C-12 (Net-Zero Accountability), the AI's focus on economic impact assessments and provincial autonomy highlights the primary political cleavage within the debate. While the Bill itself created a framework for setting targets and reporting, the AI surfaced the core unresolved political question: how to balance climate action with regional economic concerns. This shows the AI's strength in distilling the central political drama from the technical legislative text.

For Bill S-211 (Forced Labour), the analysis is revealing. The Bill itself is primarily a reporting and transparency tool. The AI, by analysing the debate, generated a much broader and more ambitious policy suite, including recommendations for victim support and incentives for ethical corporate behavior. This divergence is significant. It suggests that the AI, by processing the moral and ethical arguments made by parliamentarians, can construct a more holistic and problem-focused set of solutions than what survives the legislative process of negotiation and compromise. It potentially answers the question, "If we took all the concerns raised in this debate seriously, what would a truly comprehensive policy look like?"

For Bill C-18 (Online News), AI's seemingly contradictory advice—advocating for both less and more regulations - is, in this case, its greatest analytical strength. It captured the fundamental ideological stalemate at the heart of the debate. The final Bill represents a single, yet contested, path through this stalemate (a government-mandated bargaining framework). The AI's output, in contrast, lays bare the alternative paths not taken, such as a more market-driven approach or direct subsidies to smaller players.

In summary, the AI's contribution is not in identifying administrative details like which government body is responsible (a consistent weakness). Its strength lies in synthesizing the broader deliberative content—the economic anxieties, ethical imperatives, and ideological clashes—and translating that content into alternative policy frameworks.

5. Discussion: Can AI help strengthen democracy?

Case studies of three Canadian Bills have demonstrated that AI and the policy recommendations AI is capable of generating can enrich legislative efforts, support democratic engagement, and yield more exhaustive insights. Our research builds upon existing literature, reinforcing the documented benefits of direct democratic participation as highlighted by Asatryan & De Witte (2015) and Stutzer et al. (2019). It also addresses contemporary challenges posed by democratic decline (Freedom House, 2024; Croissant & Haynes, 2020).

Consistent with research on AI's role in enhancing democratic engagement (Savaget et al., 2018; Duberry, 2022), the research presented here extends these discussions via direct demonstrations of how AI-powered deliberation can refine policymaking processes, an outcome that arises from its power to generate data-driven insights, synthesize the concerns of stakeholders, and produce insightful and contextually relevant policy recommendations.

Prior studies, such as those by Helbing et al. (2023) and Coeckelbergh & Sætra (2023), have explored AI's capacity to facilitate civic participation. Our research takes this further by applying generative AI to real legislative debates, examining how AI-generated recommendations align with or diverge from existing policies.

This research has captured the ability of AI to facilitate and reflect diverse perspectives. It also demonstrates how AI can help bridge gaps in stakeholder representation, attributes that can be used to enhance the inclusivity and transparency of legislative initiatives. In line with that, our research also demonstrates the capacity of AI to support the development of policies designed to effectively address both immediate regulatory needs and broader systemic challenges. Additionally, our case studies illustrate how AI can be used to collect and synthesize the concerns of diverse parties. The effect: more insightful, more comprehensive, more contextually relevant policy recommendations; attributes that can be used to complement traditional legislative efforts.

The capabilities of AI notwithstanding, shortcomings persist. Indeed, differences between policies created by AI and those developed by humans highlight the complexities involved in making decisions in the real world. While AI can serve as a powerful tool for improving policy formulation, its recommendations must be integrated thoughtfully, balancing technological efficiency with democratic legitimacy and institutional accountability.

Thus, while the use of AI can provide valuable insights, particularly in identifying gaps and suggesting alternate approaches, they are not reflective of the full spectrum of inputs that shape legislative outcomes. Actual policy formulation integrates diverse considerations, including empirical data, legal frameworks, geopolitical dynamics, and the nuanced needs of affected populations. Our case studies have demonstrated that even though AI generated recommendations identified matters related to economic resilience, ethical practices, and the pursuit of equity for smaller or marginalized entities, they did not fully account for other limitations; constraints and opportunities that were not identified via debate and were therefore not contemplated by, in this case, GPT-4o-mini (e.g. legal feasibility, implementation challenges, or political constraints). Thus, at present, AI should be considered a complementary tool only, ensuring that the insights it provides are balanced with recognition of the broader, more nuanced realities of policymaking.

Additionally, as indicated, this research used GPT-4o-mini, a sophisticated large language model trained on extensive datasets, to generate policy recommendations. It is important to recognise, however, that the model carries inherent biases – stemming both from the data it was trained on and from the biases of its developers. Despite these limitations, our three case studies demonstrate that the model produces meaningful and constructive policy recommendations. Going forward, it may be possible that large organizations and governments may seek to enhance the utility of AI in policy formulation by training their own language models. For example, that might entail creating datasets that prioritize inclusivity, adaptability, or generating a deeper understanding of diverse contexts.

This research has suggested that with the appropriate AI-powered language models, democracies may become better-equipped to be more responsive to constituent concerns, a consequence, in part, of AI's capacity to amplify marginalized voices during the policy formulation process. Our research

has also demonstrated AI's potential as a vehicle to facilitate more nuanced and representative decision-making processes, thereby enabling policymakers to gain deeper insights into the interests and concerns of those they represent. Longer term, the integration of AI into policy formulation may also support more agile, adaptive, and responsive governance structures.

5.1. Case selection

In Canada, a Bill must pass through three readings in both chambers of Parliament (the House of Commons and the Senate) before it can become law. During the first reading, the Bill is introduced, and its basic purpose is explained. No debate or vote occurs. Second reading focuses on the Bill's principles and merits, with members debating its intent and implications before voting on whether it should proceed. If approved, the Bill may move to a committee for detailed examination, including expert input and the addition of recommended amendments. The third reading is the final stage. Here, members debate the Bill in its amended form (if applicable) and decide whether it should pass. If the Bill is approved, it proceeds to the other chamber or, if it has already passed in both chambers, it moves to Royal Assent. When a Bill receives Royal Assent, that "Bill" becomes a "Law". Our work focuses on debates during the third and final reading of three Canadian Bills that passed in either the House of Commons or the Senate. They were selected to represent diverse, complex, and multi-dimensional policy challenges:

- Bill C-12 (Canada Net-Zero Emissions Accountability Act): Represents environmental regulation with long-term, complex targets. The third reading debate in the Senate was extensive, involving at least six speakers and spanning over two hours (see Canada, 2021). The debate was characterized by a fundamental disagreement on the Bill's substance. Proponents framed it as an essential, if imperfect, framework for accountability and a crucial step to address the climate emergency, highlighting its improved reporting requirements and its inclusion of Indigenous knowledge. Critics condemned it as a "plan to make a plan" that was "seriously flawed," lacking concrete measures and meaningful accountability mechanisms to enforce its targets. The disagreement centred on the Bill's lack of enforceable consequences for failure and its omission of explicit economic impact assessments, which opponents argued were necessary to balance climate action with regional concerns and industrial realities.
- Bill S-211 (Fighting Against Forced Labour and Child Labour in Supply Chains Act): Represents human rights and ethical supply chain governance. The House of Commons debate involved at least seven speakers from four different parties. It lasted for just over one hour (see Canada a, 2023).. The discussion showed broad, cross-party agreement on the principle of combating forced and child labour. However, there was a sharp divergence on the Bill's effectiveness. Supporters praised it as a critical and "world-leading" first step that included penalties and would move Canada "from laggard to leader." In contrast, opposition speakers from the Bloc Québécois and NDP argued it was a weak, "empty shell" that only requires reporting and fails to mandate true due diligence or provide a legal right for victims to sue companies. This created a central tension: whether to pass an imperfect Bill immediately or hold out for stronger, more comprehensive legislation.
- Bill C-18 (Online News Act): Represents digital governance and market regulation. The third reading debate in the Senate was contentious and detailed, involving eight speakers over

more than two hours (see Canada b, 2023). It exposed an ideological divide regarding market intervention and the future of journalism. Proponents argued the Bill was an urgent and essential measure to level a playing field tilted in favour of "foreign-owned tech giants" (Meta and Google). Its purpose was to ensure fair compensation for the Canadian news industry, a factor deemed essential for the functioning of a democracy. Opponents countered that the Bill was a flawed "shakedown" designed to prop up failing traditional media corporations at the expense of innovation and consumers. This side raised significant concerns that the Bill would either backfire, causing platforms to block Canadian news entirely, or make news outlets financially beholden to the tech giants they are supposed to cover, thus undermining their independence.

These cases provide a varied landscape of deliberative contexts, allowing for a more robust test of the AI's analytical capabilities. We acknowledge that confining our evaluation of AI analysis solely to material presented in parliament during the third reading of the Bills presents inherent limitations. Actual policy formulation incorporates a broader range of inputs, including expert consultations, stakeholder feedback, empirical studies, and public opinion. However, Canada's House of Parliament does include representation and perspective from a range of independent and party-affiliated Members of Parliament (MPs) and senators. As such, third reading debates are reflective of a broad range of opinions and perspectives.

6. Conclusion

This research has explored the potential of AI-powered platforms to enhance democratic deliberation by analysing discussions and generating policy recommendations. Through three case studies – Bills dealing with climate accountability, ethical labour practices, and digital governance – we have demonstrated that AI can complement traditional legislative processes. It does so by identifying gaps, offering alternate solutions, addressing overlooked dimensions, and ensuring that sometimes marginalized voices are considered. Despite these benefits, we acknowledge that limitations persist. Those boundaries include matters arising from data sources and biases endemic in the development of the tool.

Ultimately, this research underscores the value of AI as a tool to complement – but not replace – human judgment in the policymaking process. We have demonstrated that generative AI, with its advanced natural language processing (NLP) and machine learning (ML) capabilities, holds significant potential to enhance the quality of democratic deliberations, doing so by effectively analysing and synthesizing the views of diverse stakeholders. By processing large amounts of conversational data, these technologies can recognise patterns, isolate concerns, and identify points of consensus or contention, features that facilitate more informed and nuanced discussions. Thus, through structured analysis and data-driven recommendations, AI can help democratic processes become more inclusive, transparent, and effective. Nevertheless, significant challenges and limitations endure. These include the risk of perpetuating biases inherent in training datasets and the need for rigorous oversight to prevent misuse or manipulation. AI should therefore be positioned as a tool to augment human deliberation, not automate it. Its output must be treated as another source of input to be critically examined, debated, and validated by human actors within democratic institutions.

References

- Ahlfeldt, G. M., Maennig, W., & Mueller, S. Q. (2022). *The generation gap in direct democracy: Age vs. cohort effects*. *European Journal of Political Economy*, 72, 102120. <https://doi.org/10.1016/j.ejpoleco.2021.102120>
- Aitamurto, T., Landemore, H., & Saldivar Galli, J. (2016). Unmasking the crowd: participants' motivation factors, expectations, and profile in a crowdsourced law reform. *Information, Communication & Society*, 20(8), 1239–1260. <https://doi.org/10.1080/1369118x.2016.1228993>
- Aitamurto, T., & Chen, K. (2017). The value of crowdsourcing in public policymaking: epistemic, democratic, and economic value. *The Theory and Practice of Legislation*, 5(1), 55–72. <https://doi.org/10.1080/20508840.2017.1282665>
- Akter, S., McCarthy, G., Sajib, S., Michael, K., Dwivedi, Y. K., D'Ambra, J., & Shen, K. N. (2021). Algorithmic Bias in Data-Driven Innovation in the Age of AI. *International Journal of Information Management*, 60(60), 102387. <https://doi.org/10.1016/j.ijinfomgt.2021.102387>
- Androniceanu, A. (2021). *Transparency in public administration as a challenge for a good democratic governance*. *Revista»Administratie Si Management Public«(RAMP)*, 36, 149–164. <https://www.ceeol.com/search/article-detail?id=964121>
- Asatryan, Z., & De Witte, K. (2015). *Direct democracy and local government efficiency*. *European Journal of Political Economy*, 39, 58–66. <https://doi.org/10.1016/j.ejpoleco.2015.04.005>
- Brown, A. J., Vandekerckhove, W., & Dreyfus, S. (2014). *The relationship between transparency, whistleblowing, and public trust*. *Research Handbook on Transparency*, 30–58. <https://doi.org/10.4337/9781781007945.00008>
- Buchanan, B., & Imbrie, A. (2022). *The new fire: War, peace, and democracy in the age of AI*. MIT Press
- CAFIERO, F. (2023). *Datafying diplomacy: How to enable the computational analysis and support of international negotiations*. *Journal of Computational Science*, 71, 102056–102056. <https://doi.org/10.1016/j.jocs.2023.102056>
- Canada. Parliament. Senate. Debates, 43rd Parliament, 2nd Session, issue 56, June 29, 2021. (Online). Available: https://sencanada.ca/en/content/sen/chamber/432/debates/056db_2021-06-29-e?language=e. (via WWW) [November 28, 2024]
- Canada a. Parliament. House of Commons. Debates, 44th Parliament, 1st Session, issue 185, April 26, 2023. (Online). Available: <https://www.ourcommons.ca/DocumentViewer/en/44-1/house/sitting-185/hansard>. (via WWW) [December 8, 2024]
- Canada b. Parliament. Senate. Debates, 44th Parliament, 1st Session, issue 135, June 15, 2023. (Online). Available: https://sencanada.ca/en/content/sen/chamber/441/debates/135db_2023-06-15-e?language=e. (via WWW) [December 15, 2024]
- Chadefaux, T. (2023). *An automated pattern recognition system for conflict*. *Journal of Computational Science*, 72, 102074–102074. <https://doi.org/10.1016/j.jocs.2023.10>
- Chamorro-Padial, J., Cozzo, E., & Calleja-López, A. (2024). *Decidim.viz: A data dashboard prototype for a digital democracy platform*. *SoftwareX*, 25, 101600–101600. <https://doi.org/10.1016/j.softx.2023.101600>

- Coeckelbergh, M., & Sætra, H. S. (2023). *Climate change and the political pathways of AI: The technocracy-democracy dilemma in light of artificial intelligence and human agency*. *Technology in Society*, 75, 102406. <https://doi.org/10.1016/j.techsoc.2023.102406>
- Corlăţean, T. (2024). artificial intelligence and the need for standards and accountability for protecting human rights, democracy and the rule of law. *Journal for Freedom of Conscience (Jurnalul Libertăţii de Conştiinţă)*, 12(1), 201–221. <https://doi.org/10.5281/zenodo.14829981>
- Costa-jussà, M. R., Andrews, P., Meglioli, M. C., Chen, J., Chuang, J., Dale, D., Ropers, C., Mourachko, A., Sánchez, E., Schwenk, H., Tran, T., Turkatenko, A., & Wood, C. (2024). *LCFO: Long Context and Long Form Output Dataset and Benchmarking*. ArXiv (Cornell University). <https://doi.org/10.48550/arxiv.2412.08268>
- Creemers, R. (2018). *China's social credit system: An evolving practice of control*. Social Science Research Network (SSRN). <https://doi.org/10.2139/ssrn.3175792>
- Croissant, A., & Haynes, J. (2020). *Democratic regression in Asia: introduction*. *Democratization*, 28(1), 1–21. <https://doi.org/10.1080/13510347.2020.1851203>
- Diamandis, P. H., & Kotler, S. (2020). *The future is faster than you think: How converging technologies are transforming business, industries, and our lives*. Simon & Schuster.
- Diamond, L. (2015). *Facing Up to the Democratic Recession*. *Journal of Democracy*, 26(1), 141–155. <https://doi.org/10.1353/jod.2015.0009>
- Ding, J., Chun, A., Liu, Y.-L., Han, E., Lewis, D., Gal, D., & Creemers, R. (2020). *The AI powered state: China's approach to public sector innovation*. Nesta. <https://apo.org.au/sites/default/files/resource-files/2020-05/apo-nid305076.pdf>
- Duberry, J. (2022). *Artificial Intelligence and Democracy*. <https://doi.org/10.4337/9781788977319>
- Freedom House. (2024). *Canada: Freedom in the World 2024 Country Report*. Freedom House. <https://freedomhouse.org/country/canada/freedom-world/2024>
- Freedom House. (2024). *The Mounting Damage of Flawed Elections and Armed Conflict*. Freedom House. <https://freedomhouse.org/report/freedom-world/2024/mounting-damage-flawed-elections-and-armed-conflict>
- Filgueiras, Fernando. (2022). *The politics of AI: democracy and authoritarianism in developing countries*. *Journal of Information Technology & Politics*. 19. [10.1080/19331681.2021.2016543](https://doi.org/10.1080/19331681.2021.2016543).
- Gillies, D. (2023). *Policy and Practice in Canada's International Democracy Support*. *Canada and International Affairs*, 77–99. https://doi.org/10.1007/978-3-031-35490-8_5
- Guridi, J. A., Cheyre, C., & Yang, Q. (2024). *Thoughtful Adoption of NLP for Civic Participation: Understanding Differences Among Policymakers*. ArXiv (Cornell University). <https://doi.org/10.48550/arxiv.2410.22937>
- Gründler, K., & Krieger, T. (2021). *Using Machine Learning for measuring democracy: A practitioners guide and a new updated dataset for 186 countries from 1919 to 2019*. *European Journal of Political Economy*, 102047. <https://doi.org/10.1016/j.ejpoleco.2021.102047>

- Harms, P., & Landwehr, C. (2020). *Is money where the fun ends? Material interests and individuals' preference for direct democracy*. *European Journal of Political Economy*, 61, 101818. <https://doi.org/10.1016/j.ejpoleco.2019.101818>
- Habibi, M., & Kusuma, R. D. (2022). *G20 and the Erosion of Democracy*. *Journal of Government and Political Issues*, 2(3). <https://doi.org/10.53341/jgpi.v2i3.93>
- Helbing, D., Mahajan, S., Fricker, R. H., Musso, A., Hausladen, C. I., Carissimo, C., Carpentras, D., Stockinger, E., Argota Sanchez-Vaquerizo, J., Yang, J. C., Ballandies, M. C., Korecki, M., Dubey, R. K., & Pournaras, E. (2023). *Democracy by Design: Perspectives for Digitally Assisted, Participatory Upgrades of Society*. *Journal of Computational Science*, 71, 102061. <https://doi.org/10.1016/j.jocs.2023.102061>
- Jungherr, A. (2023). *Artificial Intelligence and Democracy: A Conceptual Framework*. *Social Media and Society*, 9(3). <https://doi.org/10.1177/20563051231186353>
- Garcia, L. (2024, February 15). *Democracy Index: conflict and polarisation drive a new low for global democracy*. Economist Intelligence Unit. <https://www.eiu.com/n/democracy-index-conflict-and-polarisation-drive-a-new-low-for-global-democracy/>
- Guridi, J. A., Cheyre, C., & Yang, Q. (2024). Thoughtful Adoption of NLP for Civic Participation: Understanding Differences Among Policymakers. ArXiv (Cornell University). <https://doi.org/10.48550/arxiv.2410.22937>
- Hollyer, J. R., Rosendorff, B. P., & Vreeland, J. R. (2011). *Democracy and Transparency*. *The Journal of Politics*, 73(4), 1191–1205. <https://doi.org/10.1017/s0022381611000880>
- Janda, K., Berry, J. M., Goldman, J., Schildkraut, D., & Manna, P. (2023). *The Challenge of Democracy: Cengage Learning*.
- Landemore, H. (n.d.). "Can AI bring deliberative democracy to the masses?" <https://www.law.nyu.edu/sites/default/files/Helen%20Landemore%20Can%20AI%20bring%20deliberative%20democracy%20to%20the%20masses.pdf>
- Lars-Erik Cederman, & Girardin, L. (2023). *Computational approaches to conflict research from modeling and data to computational diplomacy*. *Journal of Computational Science*, 72, 102112–102112. <https://doi.org/10.1016/j.jocs.2023.102112>
- Lawrence, J., & Reed, C. (2019). *Argument Mining: A Survey*. *Computational Linguistics*, 1–55. https://doi.org/10.1162/coli_a_00364
- Lee, K.-F. (2018). *AI superpowers: China, Silicon Valley, and the new world order*. Houghton Mifflin Harcourt.
- Lee, K.-F., & Quifan, C. (2021). *AI 2041: Ten visions for our future*. Currency.
- Legislative Services Branch. (2019). *Canadian Multiculturalism Act*. *Justice.gc.ca*; Government of Canada. <https://laws-lois.justice.gc.ca/eng/acts/c-18.7/page-1.html>
- Leino, M., & Kulha, K. (2023). *Hopes over fears: Can democratic deliberation increase positive emotions concerning the future?* *Futures*, 154, 103246–103246. <https://doi.org/10.1016/j.futures.2023.103246>
- Liu, M., Okuhara, T., Dai, Z., Huang, W., Okada, H., Furukawa, E., & Takahiro Kiuchi. (2024). Performance of Advanced Large Language Models (GPT-4o, GPT-4, Gemini 1.5 Pro, Claude 3 Opus) on Japanese

- Medical Licensing Examination: A Comparative Study. MedRxiv (Cold Spring Harbor Laboratory). <https://doi.org/10.1101/2024.07.09.24310129>
- Matovski, A. (2021). *Popular dictatorships: Crises, mass opinion, and the rise of electoral authoritarianism*. Cambridge University Press. <https://doi.org/10.1017/9781009047500>
- Matsusaka, J. G. (2008). *For the Many or the Few*. University of Chicago Press.
- O'Donohue, A., & Carothers, T. (2019). *Democracies Divided : the Global Challenge of Political Polarization*. Brookings Institution Press.
- OpenAI Platform. (2024). Openai.com. <https://platform.openai.com/docs/models#gpt-4o-mini>
- Reilly, S. (2018). *Direct democracy : a double-edged sword*. Lynne Rienner Publishers.
- Repucci, S., & Slipowitz, A. (2022). *The Global Expansion of Authoritarian Rule*. https://freedomhouse.org/sites/default/files/2022-03/FITW_World_2022_digital_abridged_FINAL.pdf
- ROSENBAUM, A. (2022). "Democratic Decline and Public Administration: What Is to Be Done?" *Transylvanian Review of Administrative Sciences*, SI, 169–177. <https://doi.org/10.24193/tras.si2022.10>
- Savaget, P., Chiarini, T., & Evans, S. (2018). *Empowering political participation through artificial intelligence*. *Science and Public Policy*, 46(3), 369–380. <https://doi.org/10.1093/scipol/scy064>
- Schmidhuber, L., Ingrams, A., & Hilgers, D. (2020). *Government Openness and Public Trust: The Mediating Role of Democratic Capacity*. *Public Administration Review*, 81(1), 91–109. <https://doi.org/10.1111/puar.13298>
- Secretariat, T. B. of C. (2024, May 30). *Guiding principles for the use of AI in government*. [Www.canada.ca. https://www.canada.ca/en/government/system/digital-government/digital-government-innovations/responsible-use-ai/principles.html](https://www.canada.ca/en/government/system/digital-government/digital-government-innovations/responsible-use-ai/principles.html)
- Shin, B., & Rask, M. (2021). *Assessment of Online Deliberative Quality: New Indicators Using Network Analysis and Time-Series Analysis*. *Sustainability*, 13(3), 1187. <https://doi.org/10.3390/su13031187>
- Smolka, T. (2021). *Decline of democracy – the European Union at a crossroad*. *Zeitschrift Für Vergleichende Politikwissenschaft*, 15(1), 81–105. <https://doi.org/10.1007/s12286-021-00481-w>
- Sonoda, Y., Kurokawa, R., Nakamura, Y., Jun Kanzawa, Kurokawa, M., Yuji Ohizumi, Wataru Gono, & Abe, O. (2024). *Diagnostic performances of GPT-4o, Claude 3 Opus, and Gemini 1.5 Pro in "Diagnosis Please" cases*. *Japanese Journal of Radiology*. <https://doi.org/10.1007/s11604-024-01619-y>
- Stavros Moutsios. (2008). *The Decline of Democratic Politics in "Knowledge Societies" and the Initiatives for Citizenship Education*. BRILL EBooks, 503–517. https://doi.org/10.1163/9789087903756_033
- Stutzer, A., Baltensperger, M., & Meier, A. N. (2019). *Overstrained citizens? The number of ballot propositions and the quality of the decision process in direct democracy*. *European Journal of Political Economy*, 59, 483–500. <https://doi.org/10.1016/j.ejpoleco.2019.05.008>
- The Mounting Damage of Flawed Elections and Armed Conflict FREEDOM IN THE WORLD 2024 Highlights from Freedom House's annual report on political rights and civil liberties. (n.d.). https://freedomhouse.org/sites/default/files/2024-02/FIW_2024_DigitalBooklet.pdf

- V-Dem Institute. (2023). *Democracy Report 2023: Defiance in the Face of Autocratization*. https://www.v-dem.net/documents/29/V-dem_democracyreport2023_lowres.pdf
- Warren, M. E. (2017). A Problem-Based Approach to Democratic Theory. *American Political Science Review*, 111(1), 39–53. <https://doi.org/10.1017/S0003055416000605>
- Wernli, D. (2023). *Fostering interdisciplinary collaboration in computational diplomacy: A multi-layered network approach to improve our understanding of institutional complexity and effective governance design*. *Journal of Computational Science*, 72, 102096–102096. <https://doi.org/10.1016/j.jocs.2023.102096>
- Zeng, J. (2022). *Artificial intelligence with Chinese characteristics: National strategy, security and authoritarian governance*. Palgrave Macmillan. <https://doi.org/10.1007/978-981-19-0722-7>
- Zhang, A., Walker, O., Nguyen, K., Dai, J., Chen, A., & Lee, M. K. (2023). Deliberating with AI: Improving Decision-Making for the Future through Participatory AI Design and Stakeholder Deliberation. *Proceedings of the ACM on Human-Computer Interaction*, 7(CSCW1), 1–32. <https://doi.org/10.1145/3579601>
- Zhou, M., Duan, N., Liu, S., & Shum, H.-Y. (2020). *Progress in Neural NLP: Modeling, Learning, and Reasoning*. *Engineering*, 6(3), 275–290. <https://doi.org/10.1016/j.eng.2019.12.014>
- Zhou, J., Zhang, Y., Luo, Q., Parker, A. G., & Choudhury, M. D. (2023). Synthetic Lies: Understanding AI-Generated Misinformation and Evaluating Algorithmic and Human Solutions. *Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems*, 1(436). <https://doi.org/10.1145/3544548.3581318>

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7. Appendix A: Comparison between policies of Bill C-12 and AI recommended policies

The Canadian Net-Zero Emissions Accountability Act establishes a comprehensive legal framework to guide Canada toward achieving net-zero greenhouse gas emissions by 2050. The Act specifies key milestone targets, requiring the establishment of national emissions reduction objectives for 2030, 2035, 2040, and 2045, with the ultimate goal of attaining net-zero emissions by mid-century. Table 2 provides the key policies of the Bill generated by AI based on the analysis of the third reading debate transcript along with a comment from the debate that discussed the relevant policy. Table 3 provides a comparative analysis of the core provisions of Bill C-12 as well as policies recommended by the AI system. The "Bill Policies" column reflects the language of the legislative text, while the "AI Generated Policy" column presents insights derived from an AI-generated analysis of the transcript of the Bill's third reading in Parliament. Note: "No direct counterpart" indicates that the specific policy theme or component was not explicitly identified as a core provision in the Bill's text or, conversely, was not generated as a distinct policy recommendation by the AI based on its analysis of the debate.

Table 2: AI-Generated Policy Recommendations and Relevant Quotes from the Third Reading Debate

AI Generated Policy	Related Quotes From Third Reading Debate
<p>Economic Impact Assessments: Require that any climate legislation includes comprehensive economic impact assessments before implementation. This approach would ensure that any measures taken to meet emissions targets are financially viable and won't hinder economic growth or job creation, particularly in energy-dependent provinces.</p>	<p>‘The committee is concerned that plans and reports under Bill C-12 are not required to contain information about the economic and social impacts of climate action or inaction, such as through cost-benefit analysis.’ Hon. Douglas Black</p>
<p>Provincial Autonomy in Climate Commitments: Advocate for greater provincial flexibility and autonomy in developing their climate action plans, allowing provinces to tailor their strategies according to regional economic and environmental contexts. This could involve a reduction of federal mandates in favor of collaborative agreements on goals.</p>	<p>‘The committee notes how important it is for the federal government to work closely with the provinces, territories, municipalities, and industry, and in ongoing collaboration and consultation with Indigenous governance structures towards the net zero 2050 target.’ Hon. Claude Carignan</p>
<p>Market-Driven Environmental Solutions: Encourage voluntary partnerships with industries to meet emissions reduction targets, using market-based approaches rather than imposing stringent regulations. Policies could include incentivizing businesses that exceed emissions targets rather than establishing binding limits.</p>	<p>‘It is urgent that we engage companies in different strategies to reduce greenhouse gas emissions...The oil companies have said that Bill C-12 does not go far enough to support their efforts to reduce their own emissions. They are calling for the Bill to be amended to ensure better harmonization of provincial and federal plans. According to</p>

	<p>them, inadequate harmonization will have significant negative consequences’ Hon. Claude Carignan</p>
<p>Enhanced Indigenous Engagement: Implement stronger provisions for the involvement of Indigenous communities in the decision-making processes regarding climate actions and policies. This could also include integrating Indigenous land management practices into climate strategies to benefit from their traditional ecological knowledge.</p>	<p>“The preamble now states the Government of Canada’s commitment to considering Indigenous knowledge when carrying out the purposes of this act. Related amendments require the minister to consider Indigenous knowledge when setting greenhouse gas emissions reduction targets and as an expertise requirement of the advisory body as a whole. Emissions reduction plans must also consider the United Nations Declaration on the Rights of Indigenous Peoples.’ Hon. Rosa Galvez</p>
<p>Federal-Provincial Collaboration: Establish mandatory collaboration frameworks between federal and provincial governments to ensure that climate goals are aligned and that federal policies support provincial initiatives. This could involve financial incentives for provinces that develop ambitious carbon reduction strategies in partnership with the federal government.</p>	<p>‘With much of the constitutional authority residing with levels of government other than the federal government, there is a clear need for intergovernmental collaboration. Specifically, this Bill should have ensured the provincial and territorial climate policies and their plans are integrated into the targets’ Hon. Douglas Black</p>
<p>Strengthened Accountability Framework: Amend the Bill to include enforceable accountability measures for emissions reduction targets, creating legal obligations on the government to report and act decisively if targets are not met, thereby increasing public trust in government climate actions.</p>	<p>‘I see Bill C-12 as a very unambitious plan, because it lacks concrete measures and imposes no accountability on the government if it misses its targets. The Bill merely proposes a plan to make a plan.’ Hon. Claude Carignan</p>

Table 3: Comparison Between Policies of Bill C-12 and AI Recommended Policies

Overall Theme	Description of Bill’s Key Components	AI-Generated Policies based on Debate
Target Setting	The Act mandates the Minister of Environment to set specific targets for greenhouse gas emissions in milestone years, aiming for progressively more ambitious reductions. For example, the 2030 target aligns with Canada’s commitment under the Paris Agreement. (Section 7 (1), Bill C-12)	No direct counterpart was generated
Transparency and Accountability	Consistent with above, the Minister must publish targets, plans, progress, and assessment reports, and support public access to all relevant information.	Amend the Bill to include enforceable accountability measures for emissions reduction targets, creating legal obligations on the

	All emissions reduction plans and amendments are tabled in Parliament. (Section 14, Bill C-12)	government to report and act decisively if targets are not met, thereby increasing public trust in government climate actions.
Promoting Cooperation	The Minister must establish comprehensive emissions reduction plans that include interim objectives (e.g., for 2026 in the 2030 plan). These plans consider Indigenous knowledge, scientific data, and international commitments, and include strategies for both federal operations and collaborative measures with provinces. (Section 13, Bill C-12)	<p>Encourage voluntary partnerships with industries to meet emissions reduction targets, using market-based approaches rather than imposing stringent regulations. Policies could include incentivizing businesses that exceed emissions targets rather than establishing binding limits.</p> <p>Establish mandatory collaboration frameworks between federal and provincial governments to ensure that climate goals are aligned and that federal policies support provincial initiatives. This could involve financial incentives for provinces that develop ambitious carbon reduction strategies in partnership with the federal government.</p> <p>Implement stronger provisions for the involvement of Indigenous communities in the decision-making processes regarding climate actions and policies. This could also include integrating Indigenous land management practices into climate strategies to benefit from their traditional ecological knowledge</p>
Monitoring and Reporting	Regular progress reports must be made, detailing Canada’s advancement towards each milestone. If targets are not met, the Act requires an assessment report explaining the reasons, corrective actions, and additional measures to achieve future targets. (Section 15, Bill C-12)	No direct counterpart was generated
Creation of an Advisory Body	The Net-Zero Advisory Body, an independent entity, will provide guidance on achieving net-zero emissions and recommends sector-specific measures and	No direct counterpart was generated

	policies to aid target achievement. (Section 20, Bill C-12)	
Flexibility and amendments	The Act allows for amendments to emissions targets and reduction plans in response to scientific, technological, and policy developments, reinforcing Canada’s ability to meet evolving global climate goals. (Section 26, Bill C-12)	Advocate for greater provincial flexibility and autonomy in developing their climate action plans, allowing provinces to tailor their strategies according to regional economic and environmental contexts. This could involve a reduction of federal mandates in favor of collaborative agreements on goals.
Balancing Economic impact with Climate Action	No direct counterpart was mentioned in the Bill	Require that any climate legislation includes comprehensive economic impact assessments before implementation. This approach would ensure that any measures taken to meet emissions targets are financially viable and won't hinder economic growth or job creation, particularly in energy-dependent provinces.

The complete transcript for the third reading, the AI response and Bill C-12 can be found in the following link : <https://aiforallvoices.github.io/info/documents/thesis/Bill%20C12%20Canadian%20Net-Zero%20Emissions%20Accountability%20Bill.pdf>

Appendix B: Fighting Against Forced Labour and Child Labour in Supply Chains Act (Bill S-211)

The objective of Bill S-211 is to combat the sale of goods produced with the use of child labour in Canada. Table 4 lists the AI generated policies based on the third reading debate of the Bill along with relevant snippets from the debate. The comparison of the key features of the Bill and AI recommended policies based on the third reading of the Bill in parliament are captured in Table 5. The policies outlined in the Bill are derived from the text of Bill S-211, whereas the AI-generated policies originate from an analysis of the transcript from the third reading of the Bill.

Table 4: AI-Generated Policy Recommendations and Relevant Quotes from the Third Reading Debate

AI Generated Policy	Relevant Quotes From the Debate
Strengthening Trade Provisions: Develop trade agreements that incorporate strict labour protections and enforceable clauses that ban imports linked to forced and child labour. This could include increasing tariffs or trade restrictions on goods produced under exploitative conditions.	‘We will do everything in our power to ensure that goods coming into the country, our stores and our homes, and that the practices companies are engaging in abroad, are free from the stain of forced labour.’ Mr. Terry Sheehan

<p>Incentives for Responsible Corporate Behavior: Create tax incentives or subsidies for companies that demonstrate verifiable adherence to ethical labour practices. This might encourage businesses to develop transparent supply chains by making it economically beneficial to do so.</p>	<p>‘They are all standing together to say that Canada’s appalling corporate human rights violations abroad need to be treated with the rigour and the type of legislative framework that will force companies to stop these appalling abuses and practices.’ Mr. Peter Julian</p>
<p>Enhanced Penalties for Non-Compliance: Introduce more severe financial penalties and criminal liabilities for corporations found violating labour standards. This could extend to individual executives to hold decision-makers accountable for their supply chain practices.</p>	<p>‘I can imagine how this step would force companies to dig deeper and divulge more. However, the consequence for non-compliance is only a fine, really a small fine compared to the revenue that many of these companies will actually generate.’ Mr. Ted Falk</p>
<p>Support for Victims of Human Trafficking: Expand funding and resources for NGOs that support survivors of human trafficking, including rehabilitation programs and legal assistance, to ensure that victims have access to comprehensive support and justice.</p>	<p>‘In addition, global estimates indicate that at the beginning of 2020 there were approximately 160 million children who were victims of child labour, including forced child labour, and this number, too, is expected to rise, given increased poverty driven by the pandemic.’ Mr. Terry Sheehan</p>
<p>Comprehensive Supply Chain Due Diligence Law: Advocate for legislation that mandates all companies, regardless of size, to conduct comprehensive human rights due diligence in their supply chains, with a clear focus on preventing human rights abuses.</p>	<p>‘This is a Bill that would actually address human rights abuses. It would hold companies to account and force them to do their due diligence before an investment. It would make them liable... We pay lip service to human rights abroad, but we do nothing to force our companies, as well as their directors and leaders, to be accountable for the actions that they allow to take place on their property and in their operations.’ Mr. Peter Julian</p>
<p>Public Awareness Campaigns: Launch national campaigns that educate consumers about the implications of forced labour and child labour in the products they purchase, thereby promoting ethical consumerism. This could be paired with enforcement of labeling requirements for products verified as free from forced labour.</p>	<p>‘Like many of my colleagues mentioned, these types of labour help provide consumers in wealthy countries like Canada with all sorts of products at low prices. This is not a new concept.’ Ms. Kristina Michaud</p>

Table 5: Comparison Between the Policies of Bill S-211 and the AI Recommended Policies

Overall Theme	Description of Bill's Key Components	AI-Generated Policies based on Debate
Regulations	Government entities and private sector entities meeting certain thresholds involved in producing, purchasing, or distributing goods must submit annual reports to the Minister, detailing efforts to prevent forced and child labour risks in their supply chains. This includes descriptions of policies, due diligence processes, risk assessments, and employee training. Reports must be publicly accessible online. (Section 5 - 13, Bill S-211)	Advocate for legislation that mandates all companies, regardless of size, to conduct comprehensive human rights due diligence in their supply chains, with a clear focus on preventing human rights abuses.
Transparency	An electronic public registry, maintained by the Minister, will house all reports, making them accessible to the public via the Department of Public Safety and Emergency Preparedness website. (Section 22, Bill S-211)	No direct counterpart was generated
Prohibition of goods	The Act amends the Customs Tariff, prohibiting the importation of goods manufactured in whole or part by forced or child labour, enforcing accountability on imported goods through reporting obligations. (Section 26, Bill S-211)	Develop trade agreements that incorporate strict labour protections and enforceable clauses that ban imports linked to forced and child labour. This could include increasing tariffs or trade restrictions on goods produced under exploitative conditions.
Penalties	Bill S-211 imposes penalties for non-compliance with reporting and due diligence requirements related to forced labour and child labour in supply chains. Entities that fail to comply with key provisions or orders may face fines of up to \$250,000. Knowingly providing false or misleading information to authorities carries the same penalty. Additionally, directors, officers, and agents who authorize or participate in violations can be held personally liable, even if the entity itself is not prosecuted. (Section 19-21, Bill S-211)	Introduce more severe financial penalties and criminal liabilities for corporations found violating labour standards. This could extend to individual executives to hold decision-makers accountable for their supply chain practices.
Report to Parliament	The Minister is required to table an annual summary to Parliament, which includes government and corporate efforts, risk management steps, remediation measures, and any enforcement actions. This report is published online	No direct counterpart was generated

	for transparency. (Sections 11-13, Bill S-211)	
Review	A legislative review will occur every five years by a designated parliamentary committee, allowing adjustments to enhance effectiveness in combatting forced and child labour. (Section 25, Bill S-211)	No direct counterpart was generated
Incentives	No direct counterpart was mentioned in the Bill	Create tax incentives or subsidies for companies that demonstrate verifiable adherence to ethical labour practices. This might encourage businesses to develop transparent supply chains by making it economically beneficial to do so.
Victim Support	No direct counterpart was mentioned in the Bill	Expand funding and resources for NGOs that support survivors of human trafficking, including rehabilitation programs and legal assistance, to ensure that victims have access to comprehensive support and justice.
Consumer Education	No direct counterpart was mentioned in the Bill	Launch national campaigns that educate consumers about the implications of forced labour and child labour in the products they purchase, thereby promoting ethical consumerism. This could be paired with enforcement of labeling requirements for products verified as free from forced labour.

The transcript for the third reading, the AI response and Bill C-12 can be found in the following link.

<https://aiforallvoices.github.io/info/documents/the-sis/Bill%20S211%20Fighting%20Against%20Forced%20Labour%20and%20Child%20Labour%20in%20Supply%20Chains%20Act.pdf>

Appendix C : Online News Act (Bill C-18)

The intention of Bill C-18, the Online News Act, is to provide a framework for compensating news publishers for the use of their content by digital platforms. Thus, C-18 requires online platforms like Google and Meta to negotiate compensation agreements with Canadian news publishers for sharing

their content. The objective in doing so is to promote fair revenue sharing, elevating quality journalism.

Salient features of Bill C-18 and the AI recommended policies based on the third reading debate are summarized in Table 6 along with relevant comments from the debate. A comparison between the AI generated policies and the actual policies in the Bill can be seen in Table 7.

Table 6: AI-Generated Policy Recommendations and Relevant Quotes from the Third Reading Debate

AI Generated policies	Relevant Quotes From the Debate
<p>Market-Driven Solutions: Encourage a more laissez-faire approach to the digital news market, advocating for minimal regulation and allowing media outlets to adapt to changing consumer preferences and technology without government mandates. This may involve reducing regulatory burdens on news organizations to stimulate innovation.</p>	<p>‘Yes, traditional news media in this country is struggling. I say “traditional” because the truth is the industry as a whole isn’t struggling. It is just evolving, changing...The whole world and everything we do is moving online. It’s progress. That’s why you see even the traditional broadcasters slowly abandoning their business model and their old way of doing things because the world, eyeballs and consumers are going in a different direction.’ Hon. Leo Housakos</p>
<p>Collaborative Investments in Media: Encourage collaboration between government and media organizations to foster resilience in the industry. This can include funding programs for innovation in journalism practices, supporting technology-driven solutions in news delivery, and using public funds to promote media literacy initiatives to help the public navigate the evolving media landscape.</p>	<p>‘Declines in revenues have led to closures and job losses; over 469 news outlets have closed from 2008 to 2022, including over 300 community newspapers, and one third of journalism jobs have disappeared since 2010.’ Hon. Donna Dasko</p>
<p>Support for Private Sector Initiatives: Promote partnerships between traditional media and tech companies where both entities can negotiate and contract without government interventions. This could include incentives for private investments in local journalism rather than government subsidies, allowing for competitive growth based on market forces.</p>	<p>‘This sentiment was echoed by journalist and commentator Jen Gerson, who stated at committee that independent media, start-up media and media trying to build its brand in the marketplace are reliant on social media to build a brand, develop an audience and get a network across. The loss of Facebook, she believed, would be serious.’ Hon. Donna Dasko</p>
<p>Strengthened Regulations on Digital Platforms: Enact and enforce stricter regulations on digital platforms to ensure equitable negotiations with news organizations regarding the use of news content. This may involve establishing mechanisms for greater</p>	<p>‘The purpose of Bill C-18 is to rebalance the power dynamics in the digital news marketplace in order to ensure that Canadian media and journalists are fairly and equitably compensated...The Bill rebalances the power dynamics in the digital news marketplace in order to ensure fair compensation</p>

<p>accountability and transparency in deals between media outlets and tech giants.</p>	<p>for Canadian media outlets and journalists. It creates a new legislative regulatory framework to enable digital news intermediaries, such as Google and Facebook, to negotiate agreements.’ Hon. Andrew Cardozo</p>
<p>Enhanced Competition in Media: Encourage the growth of diverse media platforms by implementing policies to reduce barriers to entry for new media companies, fostering a vibrant and competitive marketplace. This can include tax incentives or grants for new media startups instead of supporting larger, established companies.</p>	<p>‘My friends, it breaks my heart. The government had so many other things it could have done. Suppose it had stopped buying so many millions of dollars in ads on Facebook and Google, and spent some of that money instead buying ads in local newspapers and ethnocultural, Indigenous and minority language publications. Suppose it had broadened its tax rebate program and rewarded Canadians directly for subscribing to newspapers and magazines.’ Hon. Paula Simon</p>
<p>Expanded Support for Local Journalism: Develop policies that provide direct financial support for local and independent news outlets, particularly in underserved communities, such as targeted grants or tax credits to help sustain their operations and promote diverse perspectives.</p>	<p>‘It is also not hyperbole to say the very fabric of our democracy depends on a robust and diverse media; without it, the body politic will not have the information it needs to make informed decisions on our nation’s future.’ Senator Harder</p>

Table 7: Comparison Between the Policies of Bill C-18 and AI Recommended Policies

Overall Theme	Description of Bill’s Key Components	AI-Generated Policies based on Debate
Fairness in compensation	The Act establishes rules to ensure fairness in the digital news marketplace by addressing the significant bargaining power imbalance between major digital platforms (e.g., Google, Meta) and Canadian news businesses. (Section 4, Bill C-18)	Encourage a more laissez-faire approach to the digital news market, advocating for minimal regulation and allowing media outlets to adapt to changing consumer preferences and technology without government mandates. This may involve reducing regulatory burdens on news organizations to stimulate innovation.
Regulation	Creates a structured process for digital platforms and news organizations to negotiate agreements regarding the use of news content. This framework upholds freedom	Enact and enforce stricter regulations on digital platforms to ensure equitable negotiations with news organizations regarding the use of news content. This may involve establishing mechanisms for greater

	of expression and journalistic independence. (Section 18-26, Bill C-18)	accountability and transparency in deals between media outlets and tech giants.
Eligibility	The Commission must designate a business as eligible if it meets specific criteria: being a qualified Canadian journalism organization or a licensed community-oriented station, producing news content of public interest focused on general and current events, employing at least two journalists in Canada, operating domestically with content edited in Canada, and adhering to recognised journalistic ethics. Additionally, Indigenous news outlets covering general interest topics and Indigenous rights may also qualify. (Section 27, Bill C-18)	No direct counterpart was generated
Prohibitions and Penalties:	Digital platforms are prohibited from engaging in discriminatory practices against news organizations and can face administrative penalties for violations. The Act also allows complaints to be filed with the CRTC (Section 51-56, Bill C-18)	No direct counterpart was generated
Oversight	The CRTC oversees the application of the Act, maintaining a list of intermediaries, monitoring compliance, handling disputes, and establishing a code of conduct for negotiations. (Section 29-44, Bill C-18)	No direct counterpart was generated
Application and exemptions	The Act does not apply to entities already regulated under the Broadcasting Act or Telecommunications Act. Digital intermediaries can be exempted if they meet specific criteria through voluntary agreements deemed fair by the Commission. (Section 11-13, Bill C-18)	No direct counterpart was generated
Monitoring and Reporting	An independent annual audit evaluates the Act's impact on the Canadian digital news landscape, ensuring transparency and accountability in its implementation. (Section 86, Bill C-18)	No direct counterpart was generated

<p>Targeted Funding Programs</p>	<p>No direct counterpart was mentioned in the Bill</p>	<p>Develop policies that provide direct financial support for local and independent news outlets, particularly in underserved communities, such as targeted grants or tax credits to help sustain their operations and promote diverse perspectives.</p> <p>Encourage the growth of diverse media platforms by implementing policies to reduce barriers to entry for new media companies, fostering a vibrant and competitive marketplace. This can include tax incentives or grants for new media startups instead of supporting larger, established companies.</p>
<p>Collaboration</p>	<p>No direct counterpart was mentioned in the Bill</p>	<p>Encourage collaboration between government and media organizations to foster resilience in the industry. This can include funding programs for innovation in journalism practices, supporting technology-driven solutions in news delivery, and using public funds to promote media literacy initiatives to help the public navigate the evolving media landscape.</p> <p>Promote partnerships between traditional media and tech companies where both entities can negotiate and contract without government interventions. This could include incentives for private investments in local journalism rather than government subsidies, allowing for competitive growth based on market forces.</p>

The complete transcript for the third reading, the AI response and Bill C-18 can be found in the following link.

<https://aiforallvoices.github.io/info/documents/the-sis/Bill%20C%2018%20online%20news%20act.pdf>